

CLAIMS

1. A method for laundering a fabric load comprising the steps of:
- disposing a fabric load in a wash container;
- delivering a wash liquor to the fabric load, said wash liquor comprising a
- substantially non-reactive, non-aqueous, non-oleophilic, apolar working fluid and at least
- one washing additive;
- applying mechanical energy to provide relative movement between said fabric load
- and said wash liquor for a time sufficient to provide fabric cleaning; and
- thereafter, substantially removing said wash liquor from said fabric load.
2. A method as defined in Claim 1, further comprising the step of moving the
- fabric load during said delivering step.
3. A method as defined in Claim 1, further comprising the step of separating
- said at least one washing additive from said working fluid after said removing step.
4. A method as defined in Claim 3, further comprising the step of filtering
- separated working fluid and reusing the filtered working fluid.
5. A method as defined in Claim 3, wherein in said separating step washing
- additive is separated from the working fluid by a gravimetric, vaporization, distillation or
- freeze distillation separation methods.
6. A method as defined in Claim 1, wherein said working fluid has a low
- vapor pressure and said removing step comprises pumping the wash liquor from the wash

container and thereafter reducing the pressure within the wash container to vaporize any remaining working fluid from the fabric load.

7. A method as defined in Claim 1, wherein said at least one washing additive  
5 has a specific gravity lower than the specific gravity of said working fluid by more than 50% and wherein said removing step comprises draining and pumping said wash liquor from the wash container to a first storage vessel, adding new working fluid to said wash container, pumping and draining the added working fluid from the wash container to the first storage vessel, permitting the at least one washing additive and the working fluid to  
10 gravimetrically separate in the first storage vessel, determining the relative position of a boundary between the separated washing additive and the working fluid in the first storage vessel and removing the separated volume of working fluid disposed below the boundary from the first storage vessel for reuse.

8. A method as defined in Claim 1, wherein said at least one washing additive  
15 has a boiling point which differs from a boiling point of said working fluid by at least about 20°C and wherein said removing step comprises draining and pumping said wash liquor from the wash container to a first storage vessel and thereafter separating the at least one washing additive from the working fluid in the first storage vessel by a distillation  
20 method.

9. A method of laundering a fabric load comprising the steps of:  
disposing a fabric load in an interior chamber of a wash container;  
pressurizing the chamber to an elevated pressure of between about 15 atm to about  
25 50 atm;

delivering a wash liquor to the fabric load in the pressurized chamber in the form of a mist, said wash liquor comprising a substantially non-reactive, non-aqueous, non-oleophilic, apolar working fluid and at least one washing additive;

5 applying mechanical energy to provide relative movement between said fabric load and said mist for a time sufficient to provide fabric cleaning;

decreasing the pressure in the chamber to volatilize said wash liquor; and

removing the volatilized wash liquor from the chamber and fabric load.

10 10. A method as defined in Claim 9, wherein in said delivering step, said at least one washing additive is added after said working fluid is added to the fabric load.

11. A method as defined in Claim 9, wherein in said delivering step, said wash liquor is sprayed in the form of a mist through high pressure jets onto the fabric load.

15 12. A method as defined in Claim 9, wherein wash liquor is pumped from the chamber and resprayed onto the fabric load.

20 13. A method as defined in Claim 9, wherein in said applying step, relative movement is provided by rotating the wash container about a horizontal axis.

14. A method as defined in Claim 9, further comprising the steps of capturing and condensing the volatilized wash liquor for reuse.

25 15. An automatic washing apparatus for dry to dry laundering of a fabric load in the home, said apparatus comprising:

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a sealed pressurizable wash chamber;  
means for pressurizing the wash chamber to pressures of from about 5 atm to about 50 atm;  
a wash basket disposed in the wash chamber for receiving a fabric load;  
5 means for dispensing a wash liquor having a vapor pressure less than the vapor pressure of water onto the fabric load at a first pressure of between 1 atm and 50 atm;  
means for agitating the wash liquor and fabric load in the wash basket;  
means for substantially removing the wash liquor from the wash basket; and  
means for reducing the pressure in the wash container to a reduced second  
10 pressure less than the first pressure to remove any remaining wash liquor from the fabric load in vapor form.

16. An automatic washing apparatus as defined in Claim 15, wherein said dispensing means includes means for mixing a substantially non-reactive, non-aqueous,  
15 non-oleophilic, apolar working fluid with at least one washing additive to form said wash liquor.

17. An automatic washing apparatus as defined in Claim 15, wherein said dispensing means includes means for sequentially dispensing a substantially non-reactive,  
20 non aqueous, non-oleophilic, apolar working fluid to the fabric load and at least one washing  
additive to the fabric load.

18. An automatic washing apparatus as defined in Claim 15, wherein said  
25 dispensing means includes means for sequentially dispensing at least one washing

additive to the fabric load and a substantially non-reactive, non-aqueous, non-oleophilic, apolar working fluid to the fabric load.

19. An automatic washing apparatus as defined in Claim 15, wherein said  
5 dispensing means dispenses the wash liquor in the form of a mist.

20. An automatic washing apparatus as defined in Claim 15, further comprising means for separating working fluid from said at least one washing additive in the removed wash liquor for reuse of the working fluid.

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